

## WEATHER, FORECASTS, AND WARNINGS.

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## NORTHERN HEMISPHERE PRESSURE.

*Alaska.*—Pressure at all stations averaged above normal for the month, particularly so over the area between Valdez and Sitka, at which latter station there was an excess of more than 0.20 inch. During the first decade pressure was continuously and abnormally high at all stations, exceeding 31 inches on the 4th at Eagle. From the 12th to 17th pressure was very low, and from the 19th to 27th high. Lows occurred about the 8th–9th, 11th–12th, 15th, 17th–18th, 20th–21st, 25th and last day of the month; and highs on the 1st, 4th–5th, 10th, 19th–20th, 22d–23d, and 26th–27th.

*Honolulu.*—Pressure averaged slightly below the normal, being continuously below from near the beginning of the month until the 11th, and from the 24th to the end of the month; at other times pressure was high. Lows occurred on the 3d–4th, 8th, 10th–11th, 17th and 24th to 27th; and highs on the 2d, 13th to 16th, 19th, 21st, and 23d.

*Iceland.*—Pressure averaged about normal, being continuously low during the 1st decade and generally above during the remainder of the month. Lows occurred on the 1st, 3d, 7th, 9th, 11th, 13th–14th, 15th, 18th–19th, and 23d–25th; and highs on the 5th–6th, 12th, 14th, 17th, 19th–22d, and on the 27th.

*Azores.*—Pressure averaged slightly below normal. Lows occurred on the 4th–6th, 11th, 18th, 21st–22d, and 27th–28th; and highs on the 2d, 7th, 9th, 13th, 20th, 26th–27th, and last day of the month.

*Siberia.*—The pressure over this area did not vary greatly from the seasonal average. During the first decade pressure averaged above normal; during the second decade below normal and during the last decade about normal. The progression of highs and lows was not well marked. Over the east coast of Asia pressure was generally low for the season. Over Russia pressure was low during the 1st and 3d decades and high during the second.

*Miscellaneous.*—A press dispatch under date of February 18 states that "it snowed in Rome to-day for the first time in 60 years. The winter has been the severest that most Italians can remember."

Another dispatch under date of the 18th states that France is now suffering from heavy gales and snow storms.

From the 2d to 9th and from the 13th to 16th rough weather was experienced over the transatlantic steamship routes, and about the 6th of the month several vessels reported icebergs drifting southward.

In the United States the month opened with high pressure over a region extending from Manitoba to the South Atlantic States, the main center being over the Plains States, and temperatures decidedly below zero extended from that region northward into Canada. A low pressure area of well-defined character that was over New Bruns-

wick caused gales over the Atlantic seaboard from Cape Hatteras northward, warnings for which were distributed the previous day.

The Plains States high moved eastward and north-eastward and by the morning of the 3d was off the middle Atlantic coast. It caused decided changes to colder weather over eastern districts, information concerning which was previously disseminated.

On the morning of the 2d there was a well-marked low over northeastern Arizona and an attendant area of precipitation extended over the southern Rocky Mountain region, the southern slope and the west Gulf States. Pressure was also low over Manitoba. On the following morning low pressure extended from Ontario to the middle Gulf coast, the precipitation area having extended eastward to the Atlantic coast and northeastward to the Ohio Valley, the Lake region and the Middle Atlantic States. On the morning of the 4th the disturbance was over the Canadian Maritime Provinces and precipitation had overspread New England. Rains in connection with this storm were heavy in portions of the Gulf and Atlantic States.

A high-pressure area of marked intensity attended by below-zero temperatures advanced from the Canadian Northwest to eastern Montana by the 4th, and remained practically stationary during the 24 hours following. On the 6th a high was central over Missouri and another had appeared over British Columbia, and cold-wave warnings were issued for portions of Montana and Wyoming. By the following morning the Missouri high had decreased in intensity and the British Columbia high had moved to Wyoming causing decided falls in temperature to below zero over the northern Rocky Mountain region, and an offshoot from it was over Kansas. By the morning of the 8th the Kansas high had advanced to Texas and, attending its movement southward, precipitation occurred over the Gulf and portions of the south Atlantic States, followed by falls to freezing temperature over Texas, of which public interests were previously advised. By the morning following the high had advanced to Tennessee and another high-pressure area had appeared over Manitoba. By the morning of the 10th a single high was over eastern Ontario, which during the next 36 hours passed southeastward to the Atlantic Ocean with decreasing intensity, having caused decided falls in temperature over northeastern districts.

A low-pressure area was over Ontario on the morning of the 7th and during the next two days passed to the Canadian Maritime Provinces. It was attended by gales on the Great Lakes during the 7th and precipitation was confined chiefly to that region.

Following the passage of the previously mentioned high area southeastward over the ocean, a low-pressure area appeared over Alberta on the 9th, and moved eastward with increasing intensity during the next two days to eastern Ontario, and during the 48 hours following, to the Grand Banks. Precipitation attending this storm began on the 10th in the West Gulf States and thence spread northward

and eastward and became general east of the Mississippi River.

Pressure had remained persistently high over the northern Plateau region from the first of the month. During the 24 hours ending 8 a. m. of the 11th temperatures fell decidedly and to below zero over North Dakota and Minnesota, of which notices had been disseminated in advance, and a high pressure area was central over the western plains States. It thence passed east-southeastward and by the morning of the 13th was central over West Virginia and by the morning following its center was off the middle Atlantic coast. It caused decided changes to colder weather over the entire country east of the Rocky Mountains. There were indications of the development of a low on the morning of the 13th over the southeastern Gulf of Mexico and by the morning following there was a well-defined circulation off the South Atlantic coast. It was not thereafter traceable on the weather charts.

Pressure was relatively low from Ontario westward to Saskatchewan on the 13th, and during the 14th and 15th a disturbance passed rapidly eastward along the northern border to Nova Scotia attended by very little precipitation.

It was followed by a high pressure area of moderate intensity that was over western Ontario on the morning of the 15th, and by the following morning over the Canadian Maritime Provinces.

High winds occurred on the Washington coast, for which warnings were issued on the 13th, in connection with a disturbance that on the 14th was over Saskatchewan. By the following morning it was over northern Illinois and by the 16th had passed to eastern New York, and thence advanced to a position off the New England coast during the 24 hours following. It then moved northward and northeastward and by the morning of the 19th was near St. Johns, Newfoundland, with a pressure reading reported from that station of 29.18 inches. It thence passed eastward over the ocean during the next 36 hours. Precipitation from this storm was confined to the Lake Region and Ohio Valley and the Atlantic States north of Virginia.

Pressure remained high over the west gulf after the passage of the high last referred to and from the 15th to the 18th it was high over the Gulf of Mexico.

Pressure became high on the 17th over eastern Ontario and by the following morning a reading of 30.44 inches was reported at Cochrane. It then passed southeastward to the middle Atlantic States and thence eastward to the ocean, causing changes to cooler weather over the middle and north Atlantic States and the lower Lake region.

A low pressure area was central on the 17th over southwestern Saskatchewan and high winds were reported on the north Pacific coast, warnings for which had been issued the previous day. On the morning of the 18th pressure was low from the eastern Plains States to the southern Plateau. The northern part of this disturbance advanced slowly eastward and northeastward and by the morning of the 20th was over Lake Huron and during the 36 hours following had passed to the Banks of Newfoundland.

Following the passage of this low area, pressure became high over Montana and from the 19th to 21st the center advanced with increasing intensity from Montana to Ontario. By the morning of the 22d its center was over eastern Quebec. A portion of the low before indicated remained over the southern Rocky Mountain region from the 18th to 20th, causing snows over middle and northern Rocky Mountain districts and also in portions of Kansas. Sleet storms were reported to have occurred in portions

of Kansas, causing interruption to telephone and telegraph service. By the morning of the 21st the disturbance had passed to northwestern Arkansas and the area of precipitation had spread to the Mississippi River. On the morning following there were two centers, one over southern Wisconsin and the other over Lake Erie, whence they passed northeastward to the Grand Banks by the morning of the 24th. Precipitation was general from the Rocky Mountains eastward, being in the form of snow over northern districts. On the 21st, heavy snow warnings were issued for Wisconsin, lower Michigan, and portions of Iowa and Illinois, and on the following morning for upper Michigan. Heavy falls of snow were reported from the States mentioned and also from eastern Minnesota. On the morning of the 22d storm warnings were ordered from Delaware Breakwater to Eastport on the Atlantic coast and high winds occurred along the coast within the succeeding 48 hours.

A storm that apparently developed over the east Gulf States was central on the 24th off the South Carolina coast, whence it moved a little north of east and passed near the Island of Bermuda during the night of the 24th.

A high pressure area was central on the morning of the 22d over Manitoba, extending through the Plains States. It remained practically stationary during the next 24 hours and by the morning of the 24th was over Kansas, attended by zero temperatures over an area extending from Kansas northward to Minnesota. By the 25th the center was over western Kentucky and on the following morning over western Maryland. It thence passed eastward to the ocean during the succeeding 24 hours, attended by moderate changes to colder weather.

Pressure was low on the morning of the 24th over the south Pacific States and on the following morning a low was near the extreme southern California coast, a pressure reading of 29.42 inches being reported at Los Angeles. On the 26th there were two low centers, one over southeastern Utah, the other over the Texas Panhandle. The Utah disturbance moved slowly southeastward to southern Texas during the next several days. The low center that was over the Texas Panhandle was by the morning of the 27th over northeastern Arkansas and by the morning of the last day of the month had moved to Nova Scotia. Precipitation attending this disturbance was general throughout the country, except over the north Pacific Coast States and the northern Plateau region. Rains were heavy in portions of the Gulf States and the Ohio Valley and severe local storms were reported in Texas on the 26th, accompanied by destructive hail, and on the 27th in portions of Alabama and Georgia. Storm warnings were ordered on the evening of the 26th for the Gulf coast and on the 27th for the Atlantic coast from Jacksonville to Eastport, and high winds occurred over the area indicated.

A high pressure area was central on the morning of the 25th over Saskatchewan attended by temperatures well below zero and cold-wave warnings were issued for eastern Montana and western North Dakota. On the 26th the high-pressure area was over North Dakota and cold-wave advices were issued for portions of the Plains States, Wisconsin, Illinois, Oklahoma and northwestern Arkansas. By the morning of the 27th, the high area had advanced to eastern South Dakota, and warnings of a cold wave were ordered for eastern and southern Arkansas and of freezing temperatures for northern Texas. Decided falls in temperature occurred over the regions indicated, although they were not quite as severe as anticipated.

On the last day of the month the high was over south-eastern Nebraska.

At the close of the month pressure was high over the Pacific coast and above normal from the Texas Panhandle to the Lake Region and also over Bermuda, and lows were central over western North Dakota, southern Texas, and the Canadian Maritime Provinces.

*Average temperatures and departures from the normal.*

Districts.	Number of stations.	Average temperatures for the current month.	Departures for the current month.	Accumulated departures since Jan. 1.	Average departures since Jan. 1.
New England.....	12	24.2	-1.5	+ 8.7	+4.4
Middle Atlantic.....	15	33.1	+0.5	+10.9	+5.4
South Atlantic.....	10	49.4	+1.6	+11.2	+5.6
Florida Peninsula <sup>1</sup> .....	9	63.9	+2.2	+10.2	+5.1
East Gulf.....	11	50.0	-0.9	+ 6.5	+3.2
West Gulf.....	11	47.2	-2.4	+ 0.1	0.0
Ohio Valley and Tennessee.....	14	33.8	-2.0	+ 6.4	+3.2
Lower Lakes.....	11	21.9	-2.8	+ 5.6	+2.8
Upper Lakes.....	13	15.0	-4.2	- 0.9	-0.4
North Dakota <sup>1</sup> .....	7	8.9	+1.4	- 1.2	-0.6
Upper Mississippi Valley.....	14	22.9	-1.7	+ 2.3	+1.2
Missouri Valley.....	12	22.9	-1.6	+ 2.1	+1.0
Northern slope.....	9	15.8	-5.7	- 7.2	-3.6
Middle slope.....	6	26.0	-6.4	- 4.9	-2.4
Southern slope <sup>1</sup> .....	8	37.9	-4.4	- 3.9	-2.0
Southern Plateau <sup>1</sup> .....	9	42.8	-3.5	- 8.1	-4.0
Middle Plateau <sup>1</sup> .....	10	28.1	-1.2	- 4.8	-2.4
Northern Plateau <sup>1</sup> .....	10	23.2	-5.7	- 9.4	-4.7
North Pacific.....	7	39.8	-0.9	- 2.8	-1.4
Middle Pacific.....	7	49.1	+0.1	- 2.8	-1.4
South Pacific.....	4	52.2	-0.4	- 2.3	-1.2

<sup>1</sup> Regular Weather Bureau and selected cooperative stations.

*Average precipitation and departures from the normal.*

Districts.	Number of stations.	Average.		Departure.	
		Current month.	Percentage of normal.	Current month.	Accumulated since Jan. 1.
New England.....	11	2.68	79	-0.70	-1.00
Middle Atlantic.....	15	1.70	53	-1.50	-2.00
South Atlantic.....	11	3.58	88	-0.50	-2.00
Florida Peninsula <sup>1</sup> .....	9	4.62	153	+1.60	+1.10
East Gulf.....	11	5.09	108	+0.30	+0.40
West Gulf.....	10	2.90	107	+0.20	+0.90
Ohio Valley and Tennessee.....	14	2.84	80	-0.70	+3.70
Lower Lakes.....	10	1.83	75	-0.60	+1.90
Upper Lakes.....	13	1.57	94	-0.10	-0.50
North Dakota <sup>1</sup> .....	7	0.10	25	-0.30	-0.40
Upper Mississippi Valley.....	15	1.54	88	-0.20	+0.20
Missouri Valley.....	12	1.48	128	+0.40	+0.20
Northern slope.....	9	0.57	74	-0.20	+0.20
Middle slope.....	6	1.53	210	+0.80	+0.50
Southern slope <sup>1</sup> .....	8	0.90	90	-0.10	-0.60
Southern Plateau <sup>1</sup> .....	9	1.36	179	+0.60	+0.20
Middle Plateau <sup>1</sup> .....	11	1.16	100	0.00	-0.40
Northern Plateau <sup>1</sup> .....	10	0.62	41	-0.90	-0.50
North Pacific.....	7	2.27	41	-3.20	-2.50
Middle Pacific.....	7	0.46	11	-3.80	-4.40
South Pacific.....	4	3.73	153	+1.30	+0.50

<sup>1</sup> Regular Weather Bureau and selected cooperative stations.

*Average relative humidity and departure from the normal.*

Districts.	Average	Departure from the normal.	Districts.	Average.	Departure from the normal.
New England.....	68	- 7	Missouri Valley.....	72	- 3
Middle Atlantic.....	68	- 6	Northern slope.....	75	+ 4
South Atlantic.....	72	- 4	Middle slope.....	73	+ 5
Florida Peninsula.....	81	+ 1	Southern slope.....	68	0
East Gulf.....	72	- 4	Southern Plateau.....	61	+17
West Gulf.....	76	+ 2	Middle Plateau.....	68	+ 4
Ohio Valley and Tennessee.....	73	- 1	Northern Plateau.....	76	+ 1
Lower Lakes.....	78	- 2	North Pacific.....	82	+ 1
Upper Lakes.....	79	- 3	Middle Pacific.....	70	- 6
North Dakota.....	84	+ 4	South Pacific.....	72	+ 3
Upper Mississippi Valley.....	77	0			

*Average cloudiness and departure from the normal.*

Districts.	Average.	Departure from the normal.	Districts.	Average.	Departure from the normal.
New England.....	4.7	-0.6	Missouri Valley.....	4.8	-0.4
Middle Atlantic.....	4.8	-0.7	Northern slope.....	5.4	+0.3
South Atlantic.....	5.4	+0.1	Middle slope.....	5.3	+0.9
Florida Peninsula.....	4.6	+0.3	Southern slope.....	5.0	+0.2
East Gulf.....	5.3	-0.3	Southern Plateau.....	4.2	+0.6
West Gulf.....	5.7	+0.1	Middle Plateau.....	4.7	-0.4
Ohio Valley and Tennessee.....	5.3	-0.9	Northern Plateau.....	5.9	-0.3
Lower Lakes.....	6.5	-0.3	North Pacific.....	6.3	-0.8
Upper Lakes.....	6.1	-0.2	Middle Pacific.....	3.6	-2.0
North Dakota.....	5.7	+0.7	South Pacific.....	5.0	+0.7
Upper Mississippi Valley.....	5.1	-0.1			

*Maximum wind velocities.*

Stations.	Date.	Velocity.	Direction.	Stations.	Date.	Velocity.	Direction.
Atlanta, Ga.....	21	54	e.	New York, N. Y.....	22	61	nw.
Block Island, R. I.....	1	60	w.	Do.....	23	58	nw.
Do.....	12	56	nw.	Norfolk, Va.....	27	55	sw.
Do.....	13	52	nw.	Pensacola, Fla.....	27	56	sw.
Do.....	23	51	w.	Pittsburgh, Pa.....	22	52	w.
Buffalo, N. Y.....	1	70	w.	Do.....	23	50	w.
Do.....	2	60	w.	Point Reyes Light, Cal.....	16	54	nw.
Do.....	4	58	w.	Do.....	17	74	nw.
Do.....	5	60	w.	Do.....	18	75	nw.
Do.....	6	50	w.	Do.....	20	70	nw.
Do.....	7	78	sw.	Do.....	21	58	nw.
Do.....	8	60	sw.	Do.....	25	70	nw.
Do.....	22	60	sw.	Do.....	26	79	nw.
Do.....	23	50	w.	Do.....	27	58	nw.
Cleveland, Ohio.....	22	50	w.	Do.....	27	50	sw.
Columbus, Ohio.....	22	54	w.	Raleigh, N. C.....	27	52	s.
Green Bay.....	22	50	n.	Richmond, Va.....	27	50	sw.
Jacksonville, Fla.....	27	59	sw.	S. E. Farallon, Cal.....	17	60	nw.
Mount Tamalpais, Cal.....	2	50	ne.	Do.....	18	56	nw.
Do.....	26	71	nw.	Do.....	20	58	nw.
Do.....	27	62	nw.	Do.....	25	50	nw.
Mount Weather, Va.....	1	58	nw.	Do.....	26	56	nw.
Do.....	12	53	nw.	Tatoosh Island, Wash.....	6	66	e.
Do.....	22	51	nw.	Do.....	7	66	e.
Do.....	23	53	nw.	Do.....	16	56	s.
New York, N. Y.....	1	63	nw.	Toledo, Ohio.....	22	55	sw.
Do.....	8	50	w.				